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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,652	05/27/2005	Swain Hong Alfred Yeo	1890-0250	7475
50255 7590 07/09/2008 MAGINOT, MOOR & BECK 111 MONUMENT CIRCLE, SUITE 3000 BANK ONE CENTER/TOWER INDIANAPOLIS, IN 46204				
EXAMINER				
PATEL, REEMA				
ART UNIT		PAPER NUMBER		
2812				
NOTIFICATION DATE		DELIVERY MODE		
07/09/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Office Action Summary

Application No.

10/536,652

Applicant(s)

YEO ET AL.

Examiner

REEMA PATEL

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-19 is/are allowed.
- 6) ☒ Claim(s) 5 and 10-16 is/are rejected.
- 7) ☒ Claim(s) 6-9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/06)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This action is in response to an amendment filed 3/17/08.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 5, 11-12, 14, and 16 rejected under 35 U.S.C. 102(b) as being anticipated by Canning et al. (U.S. 5,903,056; hereinafter 'Canning').
3. Regarding claim 5, Canning discloses a method of attaching a flip-chip to a substrate, the flip-chip including a first plurality of electrical contacts with lateral sides and the substrate including a second plurality of electrical contacts with lateral sides, the method comprising:
 - Forming a separate insulating layer of an insulating material on the entire lateral sides (15, Fig. 3) of each of the first plurality of electrical contacts (14, Fig. 3) and on the entire lateral sides (18, Fig. 3) of the second plurality of electrical contacts (12, Fig. 3) (col 2, lines 42-47; col 3, lines 21-35);
 - Joining the flip-chip to the substrate using a matrix of insulating material (15, Fig. 3) including conductive particles (16, Fig. 3) to electrically connect the

first plurality of contacts with the second plurality of contacts (col 2, lines 42-
col 3, line 20).

4. Regarding claim 11, Canning discloses the matrix of insulating material comprises an anisotropic conductive film (col 2, lines 59-62).

5. Regarding claim 12, Figure 3 of Canning discloses a flip-chip assembly comprising:

- A flip-chip (13) a first surface including a first plurality of electrical contacts (14), the first plurality of electrical contacts including lateral sides;
- A first electrically insulating film (15) formed on the entire lateral sides of the first plurality of electrical contacts;
- A substrate (11) having a second surface including a second plurality of electrical contacts (12), the second plurality of electrical contacts including lateral sides, and the second plurality of electrical contacts facing the first plurality of electrical contacts;
- A second separate electrically insulating film (18) formed on the entire lateral sides of the second plurality of electrical contacts; and
- A matrix of insulating material (15) including electrically conductive particles (16) between the flip-chip and the substrate.

6. Regarding claim 14, Canning discloses the matrix of insulating material comprises an anisotropic conductive film (col 2, lines 59-62).

7. Regarding claim 16, Canning discloses the first plurality of electrical contact comprise gold bumps (col 2, lines 42-45).

8. Claims 12 and 15-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Hashimoto (U.S. 2002/0090759 A1).

9. Regarding claim 12, Figure 1D of Hashimoto discloses a flip-chip assembly comprising:

- A flip-chip (10) a first surface including a first plurality of electrical contacts (12), the first plurality of electrical contacts including lateral sides;
- A first electrically insulating film (30) formed on the entire lateral sides of the first plurality of electrical contacts;
- A substrate (20) having a second surface including a second plurality of electrical contacts (24), the second plurality of electrical contacts including lateral sides, and the second plurality of electrical contacts facing the first plurality of electrical contacts;
- A second separate electrically insulating film (26) formed on the entire lateral sides of the second plurality of electrical contacts; and
- A matrix of insulating material (30) including electrically conductive particles ([0121]) between the flip-chip and the substrate.

10. Regarding claim 15, Hashimoto discloses the substrate is a printed circuit board ([0112]).

11. Regarding claim 16, Hashimoto discloses the first plurality of electrical contact comprise gold bumps ([0109]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
12. Claims 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Canning et al. (U.S. 5,903,056; hereinafter 'Canning') as applied to claims 1 and 12 above, respectfully, and further in view of Kitamura (U.S. 6,812,065 B1).
13. Regarding claims 10 and 13, Canning discloses a matrix of insulating material including conductive particles comprises an anisotropic conductive film (col 2, lines 59-62) but does not disclose that the matrix comprises an anisotropic conductive paste. However, Kitamura discloses using an anisotropic conductive paste () which has an advantage over an anisotropic conductive paste, which is more expensive due to greater capital investment needed for and greater waste generated during its production process (col 1, lines 22-33). Therefore, it would have been obvious to one

having ordinary skill in the art at the time the invention was made to modify the invention of Canning with using an anisotropic conductive paste so as to use a less expensive matrix material.

Allowable Subject Matter

14. Claims 17-19 are allowed.
15. Claims 6-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
16. Claims 17-19 and 6-9 are allowable or contain allowable subject matter because of the limitations specifying the particular manner in which the insulating material around each of the first and second plurality of contacts are formed.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to REEMA PATEL whose telephone number is (571)270-1436. The examiner can normally be reached on M-F, 8:00-4:30 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Garber can be reached on (571)272-2194. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Reema Patel/
Examiner, Art Unit 2812

/Charles D. Garber/
Supervisory Patent Examiner, Art Unit 2812